Intervals, Transformations, and Slope Solution (version 63)

1. The function f is graphed below.
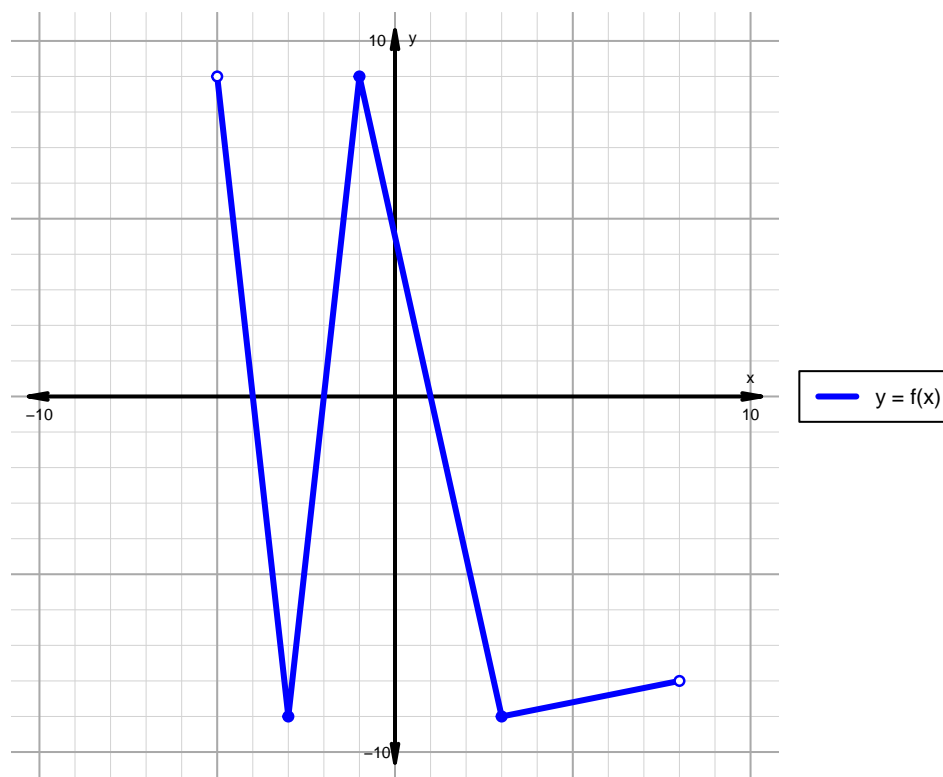
Indicate the following intervals using interval notation. Remember, you can use $\cup$ between two intervals to indicate the union. Except for range, all intervals will indicate x values; this is standard.

Feature	Where
Positive	$(-5, -4) \cup (-2, 1)$
Negative	$(-4, -2) \cup (1, 8)$
Increasing	$(-3, -1) \cup (3, 8)$
Decreasing	$(-5, -3) \cup (-1, 3)$
Domain	$(-5, 8)$
Range	$(-9, 9)$

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2. In the four graphs below, $y = f(x)$ is graphed as a dotted line. With a solid line, please graph the transformations indicated by the equations below.

$$y = f(x) - 2$$

$$y = 2 \cdot f(x)$$

$$y = f(-2 \cdot x)$$

$$y = f(x + 2)$$
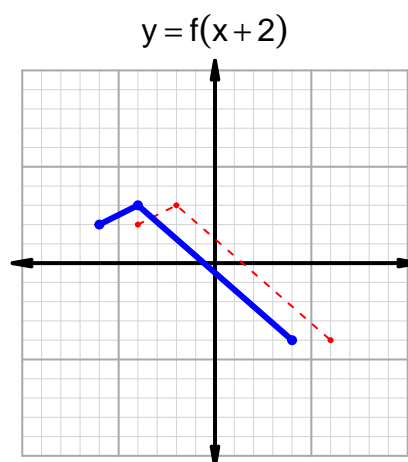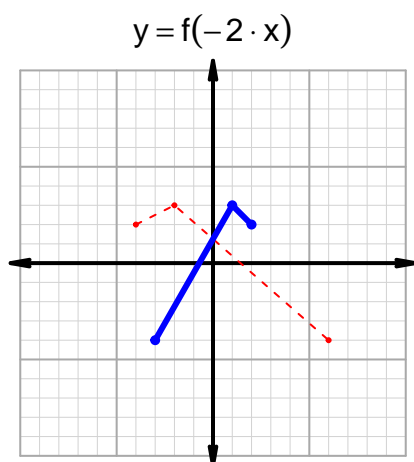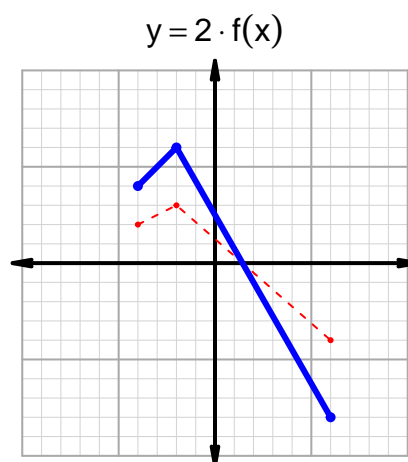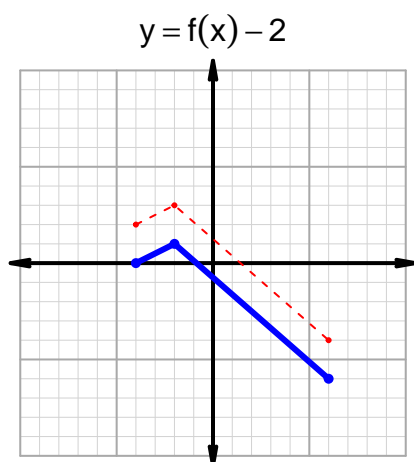
3. Let function g be defined by the table below. Use the formula $\frac{g(x_2) - g(x_1)}{x_2 - x_1}$ to find the average rate of change between $x_1 = 48$ and $x_2 = 52$. Express your answer as a reduced fraction.

x	$g(x)$
48	76
52	66
66	48
76	52

$\frac{g(52) - g(48)}{52 - 48} = \frac{66 - 76}{52 - 48} = \frac{-10}{4}$

The greatest common factor of -10 and 4 is 2. Divide numerator and denominator by the greatest common factor.

$$\text{AROC} = \frac{-5}{2}$$